



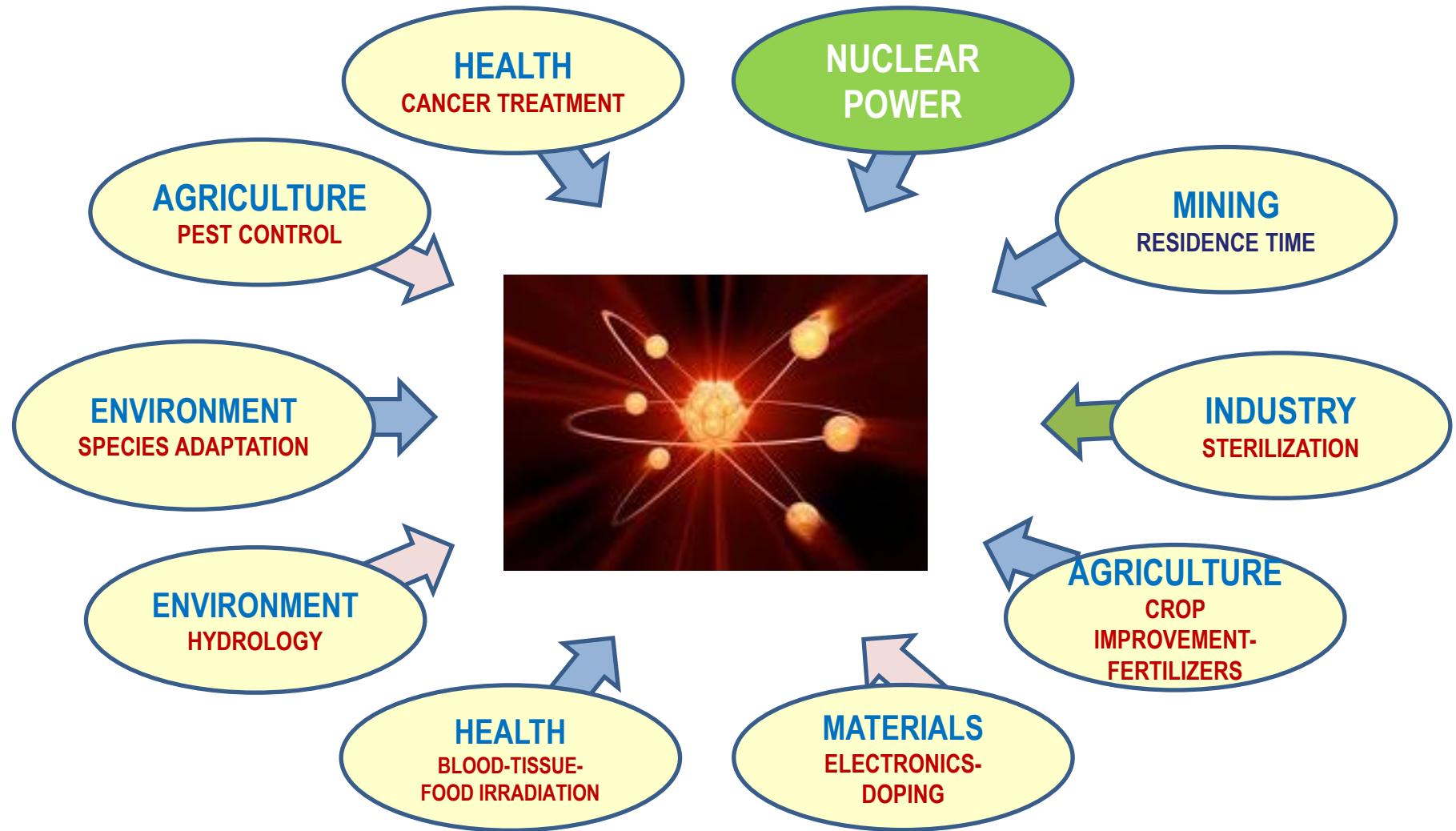
# Nuclear energy status in Chile



**Jaime Salas-Kurte, PhD  
Executive Director-CCHEN**

**July 2021**

# Nuclear applications

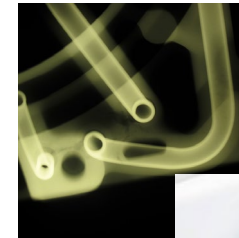
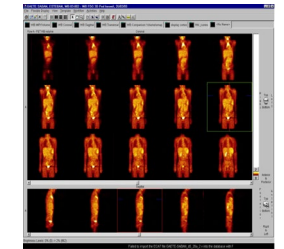


# Nuclear activities in Chile

## La Reina nuclear center



## Lo Aguirre nuclear center





# CCHEN infrastructure

Research Reactor-RECH-1 (La Reina)-5 MW.

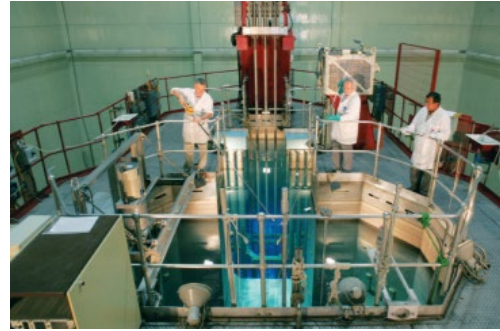
Research Reactor- RECH-2 (Lo Aguirre)-10 MW.

Multipurpose Irradiation Plant-500 Kci.

RR-Nuclear fuel fabrication plant.

Cyclotron.

Radiopharmaceutical plant.



# CCHEN infrastructure

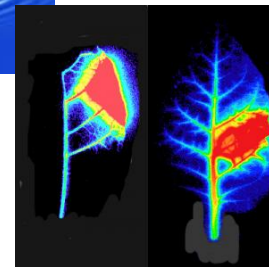
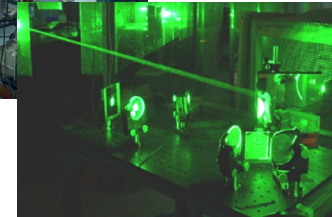
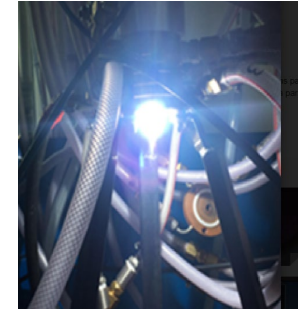
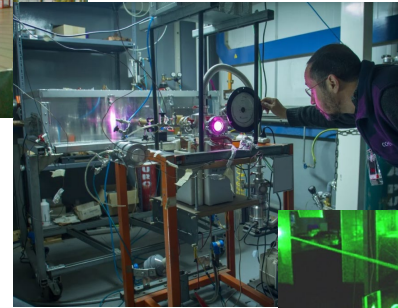
Speed 2 & Plasma Physics Labs.

Fuel cycle facilities: mining-processing-conversion

Health-Agriculture-Hydrology-Environment-Nuclear Activation

RW management facilities.

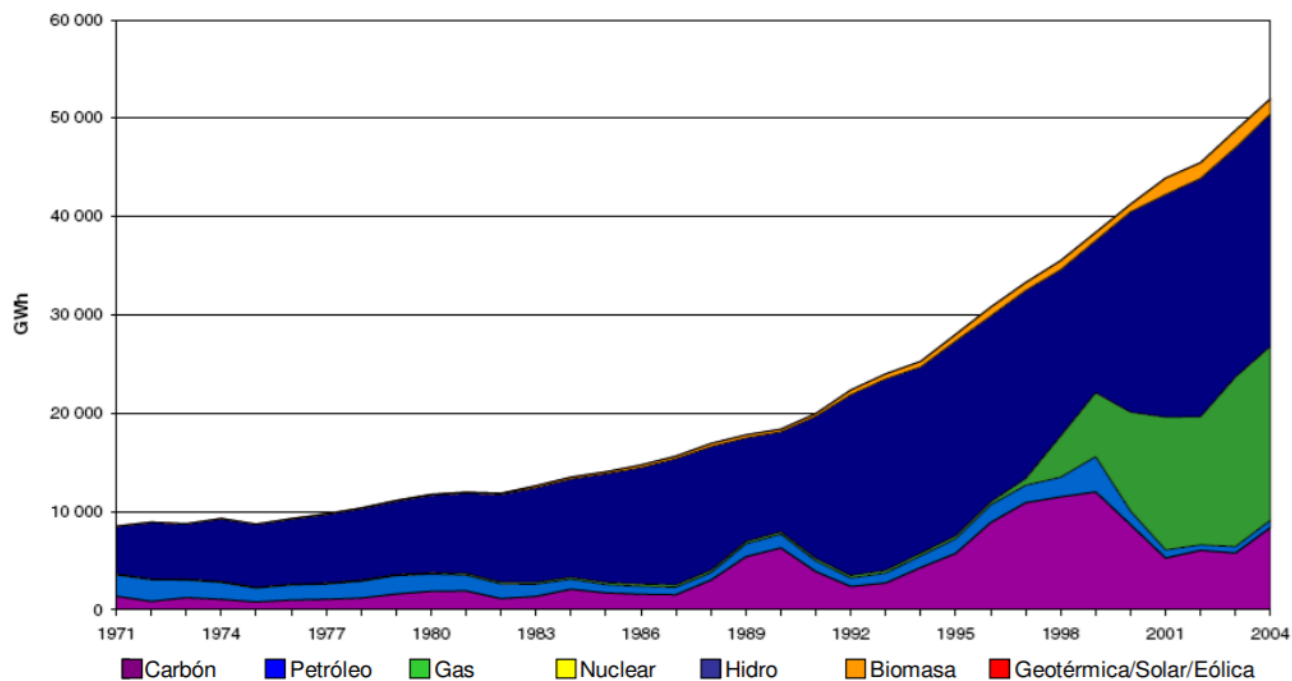
Irradiators.



# Electrical energy situation in Chile----2007

8,670MW-55% of hydraulic power plants reservoir and pass-45% by coal, fuel, diesel and natural gas combined cycle power plants.

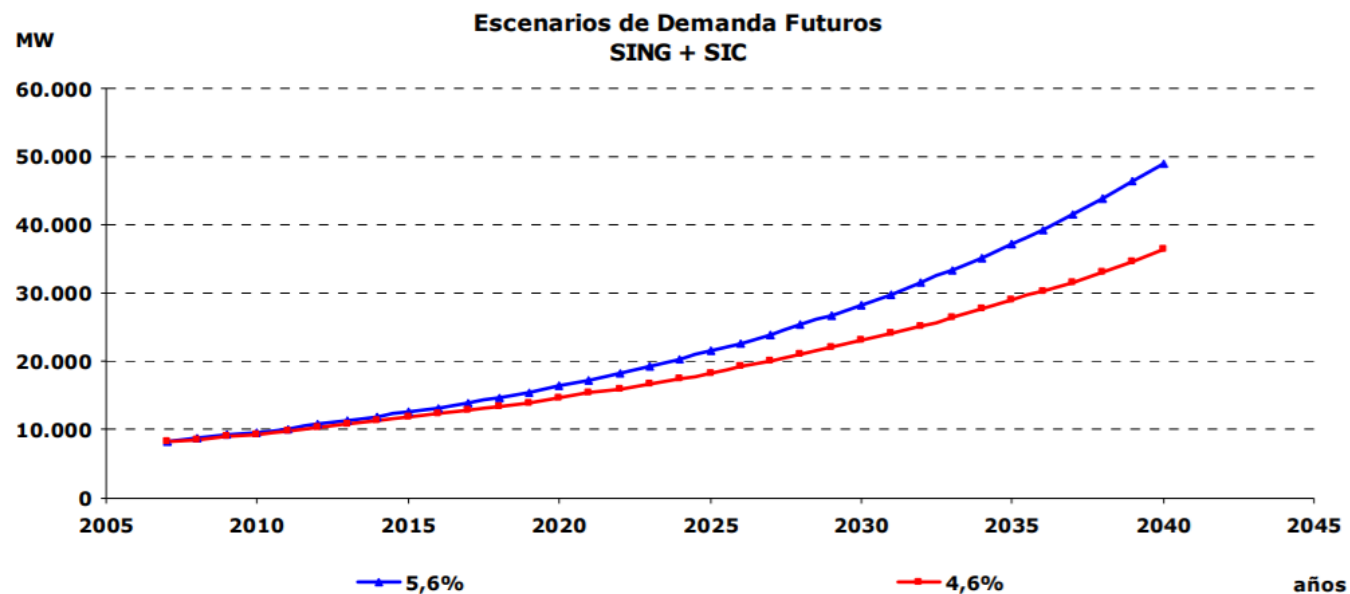
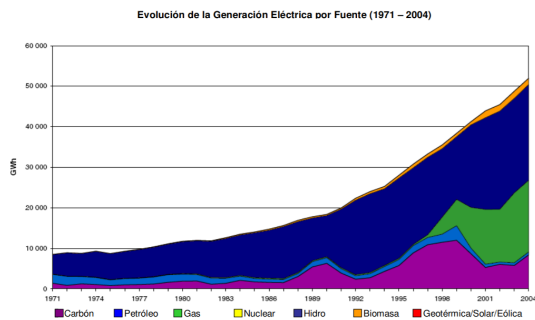
Evolución de la Generación Eléctrica por Fuente (1971 – 2004)



# Electrical energy situation in Chile----2007

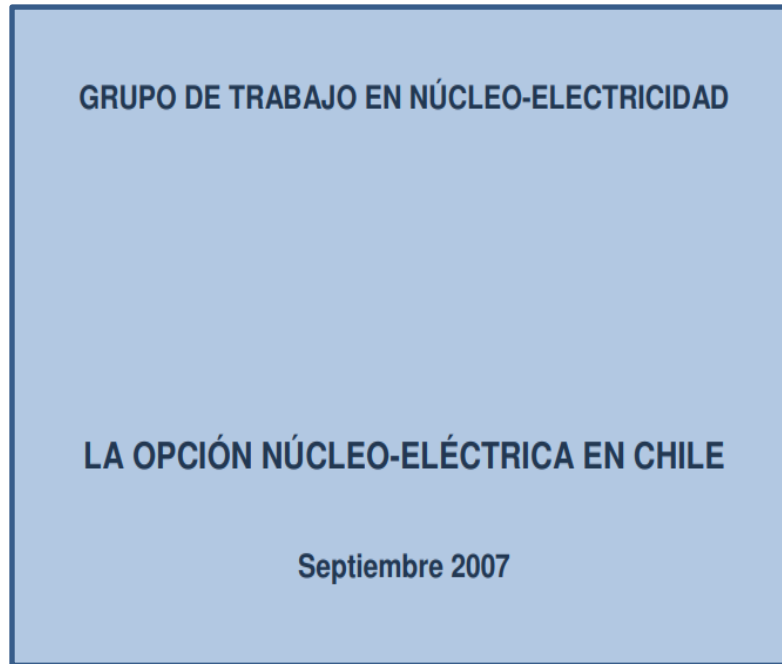
8,670MW-55% of hydraulic power plants reservoir and pass-45% by coal, fuel, diesel and natural gas combined cycle power plants.

Economic growth rate > 4%/year.



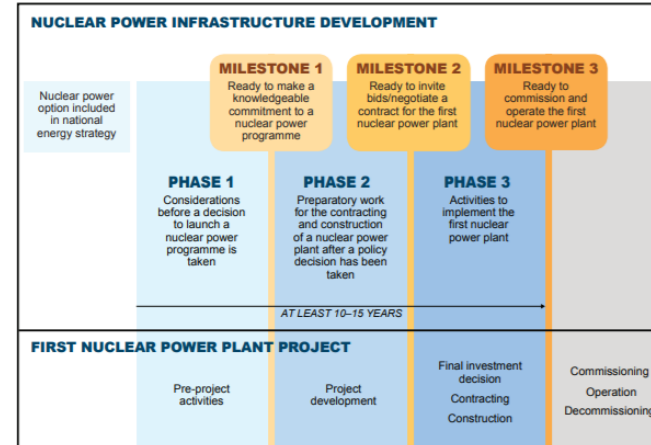
# Considering Nuclear Power.....

## First Report-2008



Nuclear energy is not a disposable option and could contribute to the security of electricity supply

## IAEA framework



## ISSUES-Self Evaluation

### Nuclear Infrastructure Issues



## National Studies

- State and Private Sector roles
- N-Regulatory Framework
- Nuclear Fuel Cycle Options
- Impacts and Risks of Core-Electric Generation
- Natural Risks
- Core Regulation - Electrical
- Adequacy of the Legal Framework
- Public opinion-perception
- Public opinion-communication

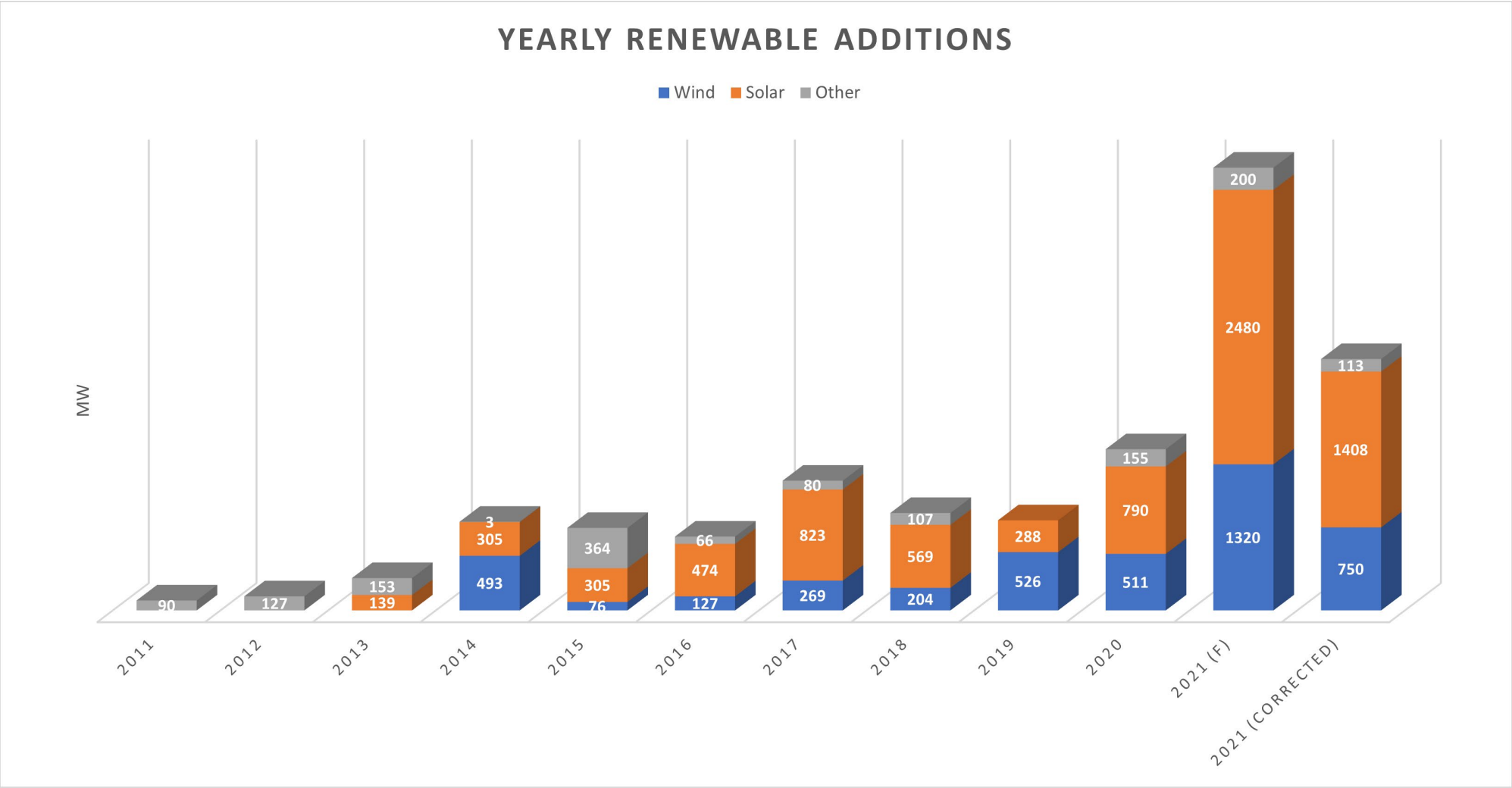




# Nuclear energy..... March 2011



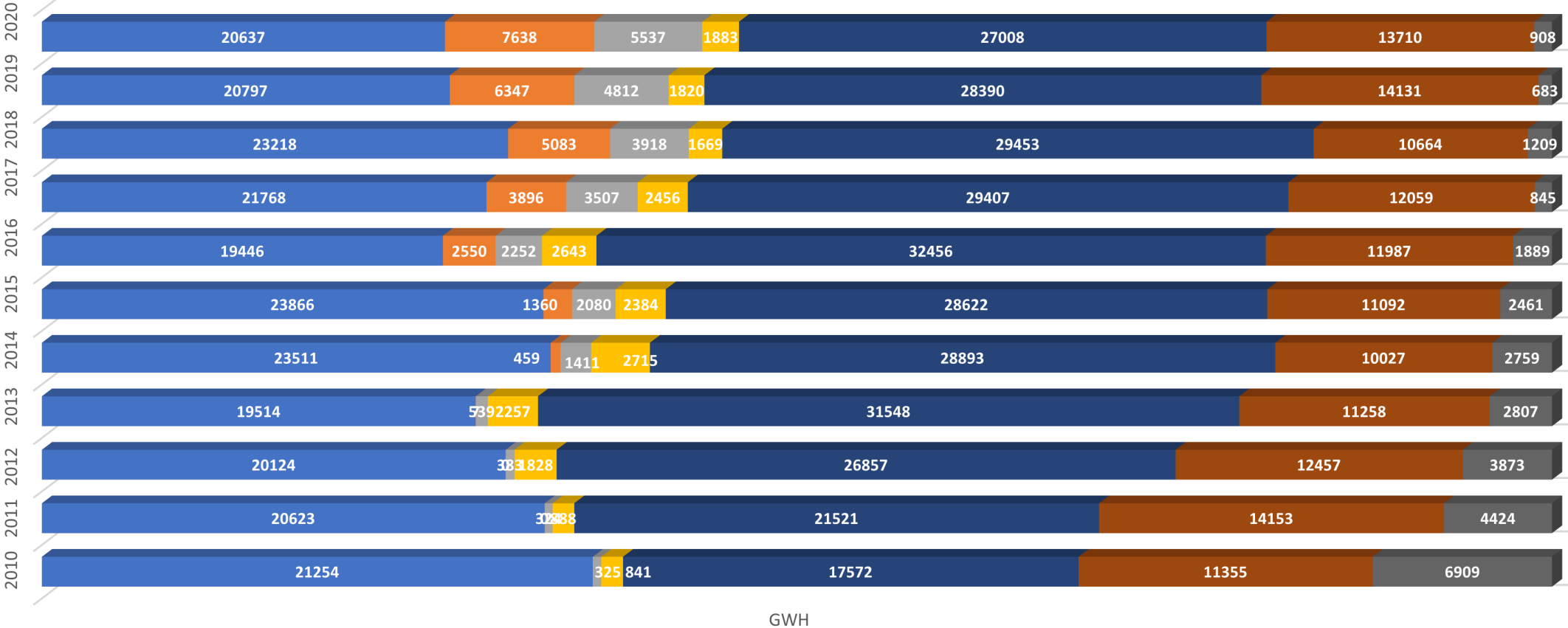
# Renewable energy growth in Chile



# Renewable energy growth in Chile

POWER GENERATION BY TECHNOLOGY

Hydro Solar Wind Biomass Coal Natural gas Oil



GWH

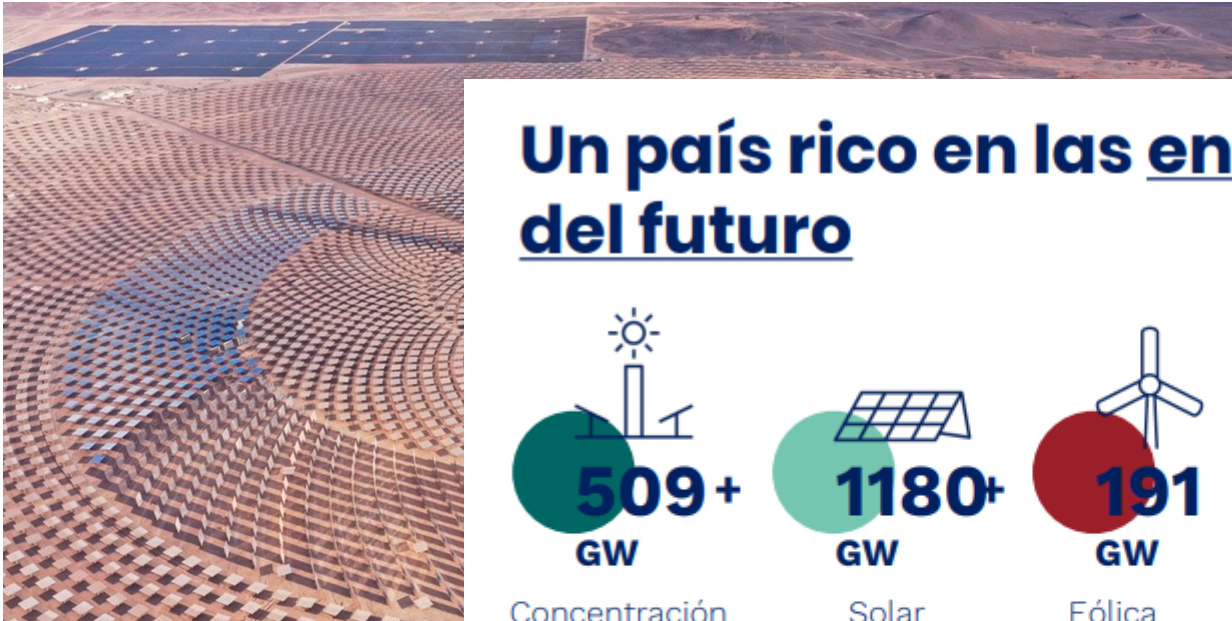


# Renewable energy growth in Chile

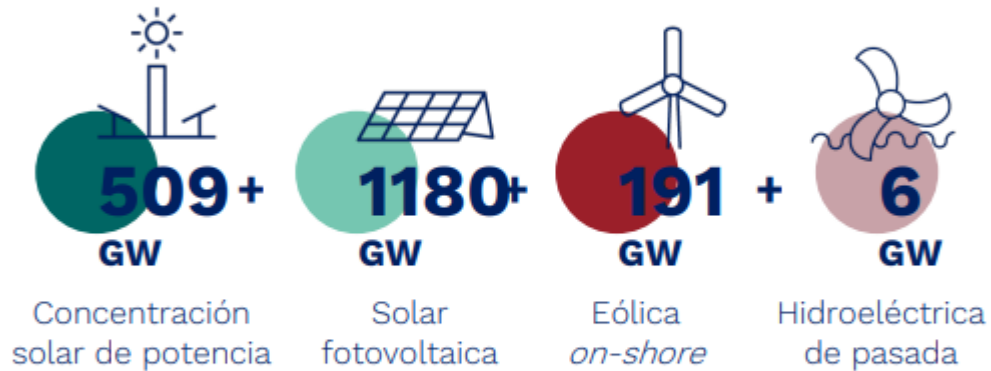




# Renewable energy growth in Chile



## Un país rico en las energías del futuro

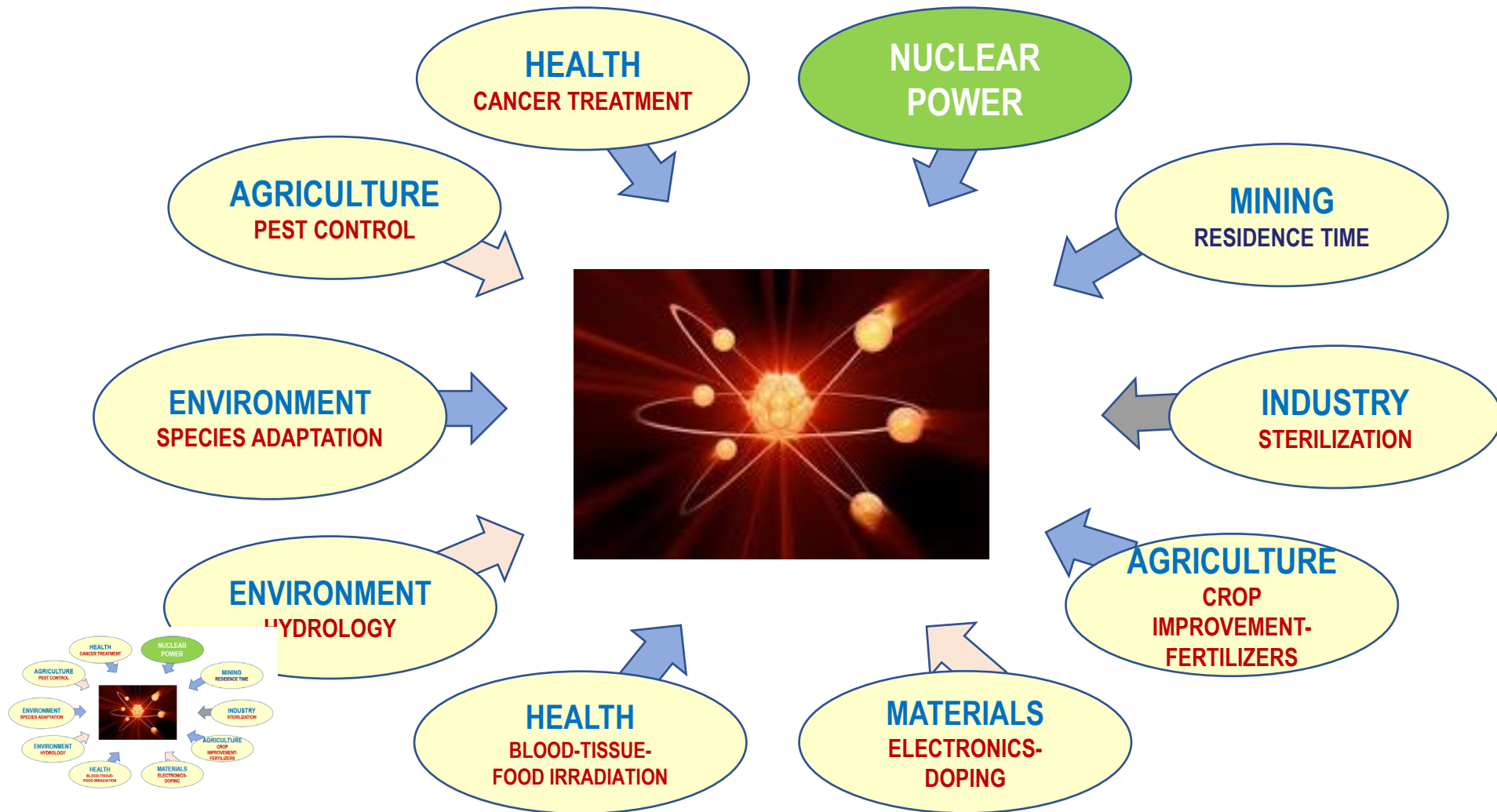


**1.800+ GW**

de potencial energético renovable  
que equivalen a 70 veces la demanda de Chile



# Nuclear applications



# CCHEN R&D organization

## R-D CORE



Research Reactors and Nuclear Fuel Center.



RD-Nuclear Research Center for Applications in Health and Biomedicine.



RD-Center for Nuclear Technologies in Vulnerable Ecosystems.



RD-Materials Center for Energy Transition and Sustainability.



RD-Center for Nuclear Physics and Neutron Spectroscopy.

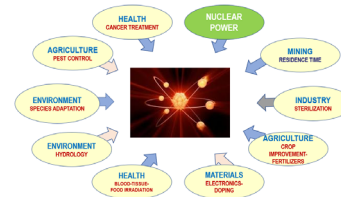


RD-Research Center on the Intersection of Plasma Physics, Matter and Complexity.

## MANAGEMENT CORE

Research & development management Center: Problem and Transfer Center/Knowledge Transfer Center.

Liaison and outreach.



## TECHNOLOGIES CORE

Technology Shared Resources Center.



# Some R&D projects

- Use of nuclear techniques (mutagenesis) to improve **adaptation and productivity of forest** species facing climate change.
- Synthesis of Li-S-C nanoparticles for **high-density energy storage devices** by the supersonic thermal plasma expansion method.
- Miniaturized **plasma thruster** for CubeSat nanosatellites.
- Use of low doses of ionizing radiation to study the **hormetic response** in plant species.
- Development of a magnetic nanohydrometallurgical system to **obtain high purity lithium brines**.
- Study and spectroscopic characterization of **cosmic background neutron sources**.



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